

POWER LOCK SYSTEMS

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GENERAL INFORMATION

INTRODUCTION

Power door locks are optional factory-installed equipment on this model. The Remote Keyless Entry (RKE) system, illuminated entry system and power windows are included on vehicles equipped with the power door lock option. Refer to 8W-61 - Power Door Locks in Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams.

POWER LOCK SYSTEM

The power lock system allows the doors to be locked or unlocked electrically by operating the switch on either front door trim panel. The power lock system operates on non-switched battery current supplied through a fuse in the junction block so that the system remains functional, regardless of the ignition switch position.

The power lock system includes the power lock switches on each front door trim panel, and the power lock motors inside each door. The power lock control circuitry and the power lock and unlock relays are integral to the high-line version of the Central Timer Module (CTM), which is mounted under the instrument panel.

Following are general descriptions of the major components in the power lock system. Refer to the owner's manual in the vehicle glove box for more

information on the features, use and operation of the power lock system.

REMOTE KEYLESS ENTRY SYSTEM

The Remote Keyless Entry (RKE) system is a radio frequency system that allows the use of a remote battery-powered radio transmitter to control the power lock system. On vehicles with the RKE option, the power locks can be operated by depressing the Lock or Unlock buttons of the RKE transmitter. If the vehicle is so equipped, the RKE transmitter also arms and disarms the factory-installed vehicle theft alarm. Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the optional vehicle theft alarm.

The RKE system includes an illuminated entry feature, which turns on the courtesy lamps for a timed interval (about thirty seconds), when the power door locks are unlocked using the RKE transmitter. The RKE system for this vehicle also features a programmable horn chirp, a programmable driver door unlock, a programmable rolling door lock, and a panic feature.

The programmable horn chirp feature allows the enabling or disabling of the horn chirp request that the RKE receiver issues as an audible indication that a valid Lock signal has been received from the RKE transmitter. The programmable driver door unlock feature allows one press of the RKE transmitter

GENERAL INFORMATION (Continued)

Unlock button to unlock just the driver door, and a second press within five seconds to unlock all of the doors. If disabled, one press of the RKE transmitter Unlock button will unlock all of the doors. The rolling door lock feature will lock all of the doors above a vehicle speed of about 24 kilometers-per-hour (15 miles-per-hour). These features can be enabled or disabled using a DRBIII® scan tool as described in the proper Diagnostic Procedures manual. These features can also be enabled/disabled using the customer programmable feature. See the owner's manual in the vehicle glove box for more information on the customer programmable feature.

The panic feature allows the vehicle operator to cause the horn to pulse, the headlights to flash and the courtesy lamps to light for about three minutes by depressing the Panic button on the RKE transmitter. A second depression of the Panic button, or a vehicle speed of about 24 kilometers-per-hour (15 miles-per-hour) will turn off the panic event prior to the expiration of the automatic three minute timer.

The RKE system can retain the vehicle access codes of up to four RKE transmitters. The transmitter codes are retained in RKE system memory, even if the battery is disconnected. If a transmitter is faulty or is lost, new transmitter vehicle access codes can be programmed into the system using a DRBIII® scan tool as described in the proper Diagnostic Procedures manual. If one functional transmitter is available, up to three additional transmitters can be programmed using the customer programmable feature. See the owner's manual in the vehicle glove box for more information on the customer programmable feature.

The RKE system consists of a driver unlock relay, a headlamp (or security) relay, a horn relay, a key fob remote radio transmitter and a radio receiver with program logic, which is integral to the high-line version of the Central Timer Module (CTM).

Following are general descriptions of the major components in the RKE system. Refer to the owner's manual in the vehicle glove box for more information on the features, use and operation of the RKE system.

DESCRIPTION AND OPERATION

CENTRAL TIMER MODULE

Two versions of the Central Timer Module (CTM) are available on this vehicle, a base version and a high-line version. The base version of the CTM is used on base models of the vehicle. The base version of the CTM combines the functions of a chime/buzzer module, and an intermittent wipe module into a single unit. The base CTM also uses inputs from the door ajar switches, the headlamp switch and the

key-in ignition switch to control the output to the dome lamp circuits, which allows the base CTM to provide load shedding to help protect the battery from becoming discharged.

The high-line version of the CTM is used on high-line vehicles. The high-line CTM provides all of the functions of the base version CTM, but also is used to control and integrate many of the additional electronic functions and features included on the high-line models. The high-line version of the CTM contains a central processing unit and interfaces with other modules in the vehicle on the Chrysler Collision Detection (CCD) data bus network.

The CCD data bus network allows the sharing of sensor information. This helps to reduce wire harness complexity, reduce internal controller hardware, and reduce component sensor current loads. At the same time, this system provides increased reliability, enhanced diagnostics, and allows the addition of many new feature capabilities.

The high-line CTM controls features and functions of the power lock, illuminated entry, and Remote Keyless Entry (RKE) systems. The high-line CTM receives hard-wired inputs from the power lock switches, CCD message inputs from the Powertrain Control Module (PCM) and Airbag Control Module (ACM), and coded radio frequency inputs from the RKE transmitters. In response to those and many other inputs, the internal programming of the CTM sends the proper outputs to control the power lock motors, the headlamp and horn relays, and the courtesy lamps.

Some of the features and functions of the power lock, illuminated entry and RKE systems made possible because of the communication of the CTM on the CCD data bus network include:

- A door-lock inhibit feature which prevents the power lock system from being energized with a power door lock switch while the driver door is open if the key is in the ignition and/or the headlamps are on. However, the locks can still be operated manually, with a key, or energized with the RKE transmitter.

- A programmable driver door unlock feature. The driver door unlock feature allows one press of the RKE transmitter Unlock button to unlock just the driver door, and a second press within five seconds to unlock all doors and the liftgate. If disabled, one press of the RKE transmitter Unlock button will unlock all doors and the liftgate.

- A central locking feature. Central locking allows all of the doors on the vehicle to be locked when a key is used in either front door lock cylinder to lock either front door. Similarly, central locking will also unlock all of the doors on the vehicle when the key is rapidly cycled twice to the unlock position in either front door lock cylinder. This feature uses inputs

DESCRIPTION AND OPERATION (Continued)

from the two door lock cylinder switches, which are components of the Vehicle Theft Security System (VTSS). Refer to Group 8Q - Vehicle Theft/Security Systems for more information on the door lock cylinder switches.

- A panic mode feature which can provide additional personal security and protection. When the Panic button on the RKE transmitter is depressed the vehicle horn will pulse, the headlights will flash, and the interior lights will illuminate on the vehicle for about three minutes, or until the Panic button is depressed a second time. A vehicle speed of about 24 kilometers-per-hour (15 miles-per-hour) will also cancel the panic mode.

- An enhanced accident response feature will unlock all of the doors, then prevent the power door locks from locking the doors for a predetermined time interval, after receiving a CCD message from the ACM indicating a frontal impact of the vehicle requiring airbag deployment. This feature will also turn on the courtesy lamps ten seconds after receiving the ACM deployment message, if the CCD vehicle speed message from the PCM indicates that the vehicle is not moving. Of course, these responses are dependent upon functional battery power and wiring circuitry following the impact.

- Rolling door locks is a programmable feature of the power lock system. This feature will automatically lock all of the doors after the vehicle reaches a speed of about 24 kilometers-per-hour (15 miles-per-hour) or greater. This feature will also lock the doors if a door is opened, then closed again, at any speed above 24 kilometers-per-hour (15 miles-per-hour).

- A programmable feature of the RKE system is the enabling or disabling of the horn chirp following activation of the RKE Lock function. This feature can be enabled or disabled and, if enabled, the horn chirp duration (twenty or forty milliseconds) can be selected.

Both versions of the CTM are mounted under the passenger side end of the instrument panel, outboard of the instrument panel glove box opening. Refer to Central Timer Module in the Removal and Installation section of Group 8E - Instrument Panel Systems for the service procedures.

The programmable features of the CTM can be enabled or disabled using the DRBIII® scan tool as described in the proper Diagnostic Procedures manual. Refer to Central Timer Module in the Diagnosis and Testing section of Group 8U for diagnosis of the base version of the CTM. For diagnosis of the high-line version of the CTM or of the CCD data bus, a DRBIII® scan tool and the proper Diagnostic Procedures manual are recommended. The CTM cannot be repaired and, if faulty or damaged, it must be replaced.

POWER LOCK SWITCH

On conventional cab and club cab models, the power locks can be controlled by a two-way switch integral to the power window and lock switch and bezel unit on the trim panel of each front door. On quad cab models, the power locks can be controlled by a two-way switch integral to the power window and lock switch and bezel unit on the driver side front door trim panel, or a two-way single gang switch on the passenger side front door trim panel.

The power lock switches control the battery feeds to the lock and unlock sense inputs of the high-line Central Timer Module (CTM). The CTM then relays the correct battery and ground feeds to the power lock motors. A Light-Emitting Diode (LED) in the paddle of each switch is illuminated whenever the ignition switch is in the On position.

On all models, the driver side power window and lock switch and bezel unit cannot be repaired and, if faulty or damaged, the entire switch unit must be replaced. On conventional cab and club cab models, the passenger side power window and lock switch and bezel unit cannot be repaired and, if faulty or damaged, the entire switch and bezel unit must be replaced. On quad cab models, the passenger side power lock switch cannot be repaired and, if faulty or damaged, the single gang switch unit must be replaced.

POWER LOCK MOTOR

In the power lock and Remote Keyless Entry (RKE) systems, the door latch lock mechanisms can be actuated by a reversible electric motor. The power lock motor is integral to the door latch mounted within each door. The power lock motor direction is controlled by the battery and ground feeds from the power lock and unlock relays, which are integral to the high-line Central Timer Module (CTM).

The power lock motor cannot be repaired and, if faulty or damaged, the entire door latch unit must be replaced.

REMOTE KEYLESS ENTRY TRANSMITTER

The Remote Keyless Entry (RKE) system transmitter is equipped with three buttons, labeled Lock, Unlock, and Panic. It is also equipped with a key ring and is designed to serve as a key fob. The operating range of the transmitter radio signal is up to 7 meters (23 feet) from the RKE receiver.

Each transmitter has a different vehicle access code, which must be programmed into the memory of the RKE receiver in the vehicle in order to operate the RKE system. See Remote Keyless Entry Transmitter Programming in the Service Procedures section this group for more information.

DESCRIPTION AND OPERATION (Continued)

The transmitter operates on two Duracell DL2016, Panasonic CR2016 (or equivalent) batteries. Typical battery life is from one to two years. The RKE transmitter cannot be repaired and, if faulty or damaged, it must be replaced.

REMOTE KEYLESS ENTRY RECEIVER

The Remote Keyless Entry (RKE) receiver is a radio frequency unit that is integral to the high-line version of the Central Timer Module (CTM). The CTM also contains the program logic and control circuitry for the RKE system. The CTM is mounted under the passenger side end of the instrument panel, outboard of the instrument panel glove box opening.

The RKE receiver has a memory function to retain the vehicle access codes of up to four RKE transmitters. The receiver is designed to retain the transmitter codes in memory, even if the battery is disconnected.

The RKE receiver is energized by one of three radio frequency inputs from the RKE transmitter: Unlock, Lock, or Panic. The programming of the CTM responds to these RKE inputs, as well as many other inputs, by sending the proper control outputs to the power lock motors, the courtesy lamp circuit, the driver unlock relay, the horn relay, and the headlamp relay.

For diagnosis or programming of the RKE receiver within the high-line CTM, a DRB scan tool and the proper Diagnostic Procedures manual are recommended. The RKE receiver is only serviced as a unit with the high-line CTM and, if faulty or damaged, the CTM unit must be replaced.

DRIVER UNLOCK RELAY

The driver unlock relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The driver unlock relay is a electromechanical device that switches battery current to the left front door power lock motor when the Remote Keyless Entry (RKE) receiver within the high-line Central Timer Module (CTM) grounds the relay coil. See Driver Unlock Relay in the Diagnosis and Testing section of this group for more information.

The driver unlock relay is located in the relay and fuse block attached to the back of the junction block, under the left side of the instrument panel in the passenger compartment. The driver unlock relay cannot be repaired and, if faulty or damaged, it must be replaced.

HEADLAMP RELAY

The headlamp (or security) relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The headlamp relay is a electromechanical device that switches battery current to the headlamps when the high-line Central Timer Module (CTM) grounds the relay coil. See Headlamp Relay in the Diagnosis and Testing section of this group for more information.

The headlamp relay is located in the Power Distribution Center (PDC), behind the battery on the left side of the engine compartment.

The headlamp relay cannot be repaired and, if faulty or damaged, it must be replaced.

HORN RELAY

The horn relay is a International Standards Organization (ISO) micro-relay. The terminal designations and functions are the same as a conventional ISO relay. However, the micro-relay terminal orientation (or footprint) is different, current capacity is lower, and the relay case dimensions are smaller than those of the conventional ISO relay.

The horn relay is a electromechanical device that switches battery current to the horn when the horn switch or the high-line Central Timer Module (CTM) grounds the relay coil. Refer to **Relays** in the Diagnosis and Testing section of this group for more information.

The horn relay is located in the Junction Block (JB), on the left end of the instrument panel in the passenger compartment. See the fuse and relay layout label on the inside of the fuse access panel for relay identification and location.

If a problem is encountered with a continuously sounding horn, it can usually be quickly resolved by removing the horn relay from the JB until further diagnosis is completed.

The horn relay cannot be repaired and, if faulty or damaged, it must be replaced.

DIAGNOSIS AND TESTING

POWER LOCK SYSTEM AND REMOTE KEYLESS ENTRY SYSTEM

As a preliminary diagnosis for vehicles with the power lock and Remote Keyless Entry (RKE) systems (high-line version of the Central Timer Module), note the system operation while you actuate both the Lock

DIAGNOSIS AND TESTING (Continued)

and Unlock functions with the power lock switches and the RKE transmitter. Then, proceed as follows:

- If the driver side front door power lock motor fails to unlock following a single press of the RKE transmitter Unlock button, test the driver unlock relay. See Relays in the Diagnosis and Testing section of this group for the procedures.
- If the entire power lock system fails to function with either the power lock switches or the RKE transmitter, check the fuses in the junction block.
- If the power lock system functions with both power lock switches, but not with the RKE transmitter, see Remote Keyless Entry Transmitter in the Diagnosis and Testing section of this group.
- If the entire power lock system functions with the RKE transmitter, but not with one or both of the power lock switches, see Power Lock Switch in the Diagnosis and Testing section of this group.
- If one power lock motor fails to operate with both of the power lock switches and/or the RKE transmitter, see Power Lock Motor in the Diagnosis and Testing section of this group.

If the problem being diagnosed involves only the RKE horn chirp or panic mode features, test the horn relay and/or headlamp relay. See Relays in the Diagnosis and Testing section of this group for the procedures. If both of these relays check OK, further diagnosis should be performed using a DRB scan tool as described in the proper Diagnostic Procedures manual.

POWER LOCK SWITCH

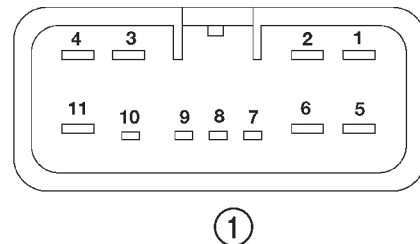
CONVENTIONAL CAB AND CLUB CAB

The Light-Emitting Diode (LED) illumination lamps for all of the power window and lock switch and bezel unit switch paddles receive battery current through a fuse in the Junction Block (JB). If all of the LEDs are inoperative in either or both power window and lock switch and bezel units, refer to Group 8S - Power Window Systems for diagnosis. If only one LED in a power window and lock switch and bezel unit is inoperative, replace the faulty switch and bezel unit. For circuit descriptions and diagrams, refer to 8W-61 - Power Door Locks in Group 8W - Wiring Diagrams.

- (1) Check the fuse in the JB. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.
- (2) Check for battery voltage at the fuse in the JB. If OK, go to Step 3. If not OK, repair the open circuit to the Power Distribution Center (PDC) as required.
- (3) Disconnect and isolate the battery negative cable. Remove the power window and lock switch and bezel unit from the door trim panel. Unplug the wire harness connector from the switch and bezel unit.

- (4) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the body half of the power window and lock switch and bezel unit wire harness connector. If OK, go to Step 5. If not OK, repair the open circuit to the JB as required.

- (5) Test the power lock switch continuity. See the Power Lock Switch Continuity charts to determine if the continuity is correct in the Neutral, Lock and Unlock switch positions (Fig. 1) or (Fig. 2). If OK, repair the door lock switch output (lock and/or unlock) circuit(s) from the body half of the power window and lock switch and bezel unit wire harness connector to the power lock motors or the Central Timer Module (CTM) as required. If not OK, replace the faulty switch.



DRIVER SIDE LOCK SWITCH	
SWITCH POSITION	CONTINUITY BETWEEN
NEUTRAL	7 & 9, 8 & 9
LOCK	7 & 9, 8 & 10
UNLOCK	7 & 10, 8 & 9
LAMP	3 & 5

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Fig. 1 Power Lock Switch Continuity - Driver Side - Conventional Cab and Club Cab

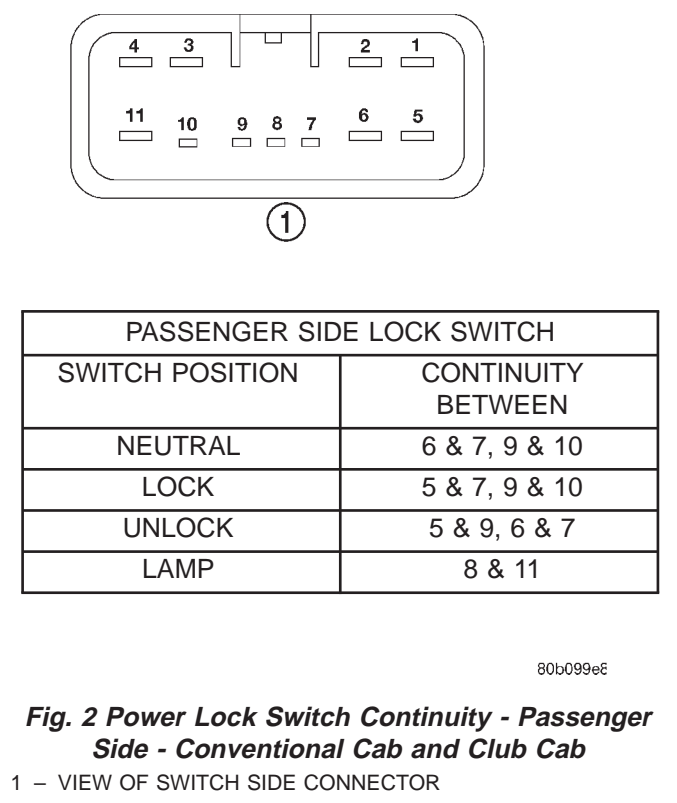
1 – VIEW OF SWITCH SIDE CONNECTOR

QUAD CAB

The Light-Emitting Diode (LED) illumination lamps for all of the power lock switch paddles receive battery current through a fuse in the Junction Block (JB). If the problem being diagnosed involves only the power lock switch illumination LEDs, check the fused ignition switch output (run) and ground circuits at the power lock switch connector. For circuit descriptions and diagrams, refer to 8W-61 - Power Door Locks in Group 8W - Wiring Diagrams.

- (1) Check the fuse in the JB. If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

DIAGNOSIS AND TESTING (Continued)



(2) Check for battery voltage at the fuse in the JB. If OK, go to Step 3. If not OK, repair the open circuit to the Power Distribution Center (PDC) as required.

(3) Disconnect and isolate the battery negative cable. Unplug the wire harness connector from the power lock switch.

(4) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the body half of the power lock switch wire harness connector. If OK, go to Step 5. If not OK, repair the open circuit to the JB as required.

(5) Test the power lock switch continuity. See the Power Lock Switch Continuity charts to determine if the continuity is correct in the Off, Lock and Unlock switch positions (Fig. 3) or (Fig. 4). If OK, repair the door lock switch output (lock and/or unlock) circuit(s) from the body half of the power lock switch wire harness connector to the Central Timer Module (CTM) as required. If not OK, replace the faulty switch.

CENTRAL TIMER MODULE

NOTE: The following tests may not prove conclusive in the diagnosis of the high-line version of the Central Timer Module (CTM). The most reliable, efficient, and accurate means to diagnose the high-line CTM requires the use of a DRBIII® scan tool and the proper Diagnostic Procedures manual.

If the problem being diagnosed involves only the RKE horn chirp feature, see Relays in the Diagnosis

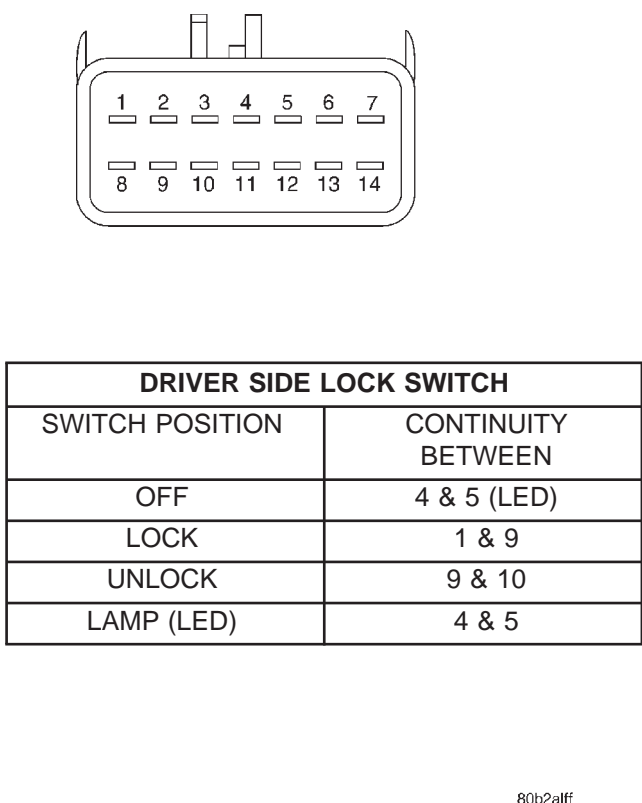


Fig. 3 Power Lock Switch Continuity - Driver Side - Quad Cab

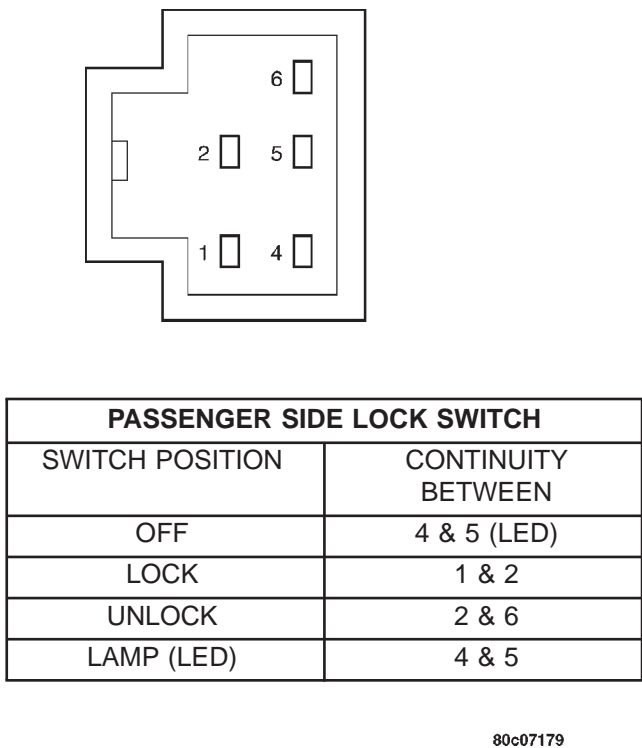


Fig. 4 Power Lock Switch Continuity - Passenger Side - Quad Cab

and Testing section of this group to test the horn relay before testing the CTM. If the relay checks OK;

DIAGNOSIS AND TESTING (Continued)

or if the problem being diagnosed involves the rolling door locks, door lock inhibit, central locking or enhanced accident response features, further diagnosis of the CTM should be performed using a DRBIII® scan tool as described in the proper Diagnostic Procedures manual. If the problem being diagnosed involves only the RKE driver unlock feature, be certain that the feature is enabled using a DRBIII® scan tool and the proper Diagnostic Procedures manual. Also, if the problem being diagnosed involves only the driver side front door, see Relays in the Diagnosis and Testing section of this group to test the driver unlock relay before testing the CTM. For circuit descriptions and diagrams, refer to 8W-61 - Power Door Locks in Group 8W - Wiring Diagrams.

(1) Check the fuses in the Junction Block (JB). If OK, go to Step 2. If not OK, repair the shorted circuit or component as required and replace the faulty fuse.

(2) Check for battery voltage at the fuse in the junction block. If OK, go to Step 3. If not OK, repair the open circuit to the Power Distribution Center (PDC) as required.

(3) Disconnect and isolate the battery negative cable. Remove the Central Timer Module (CTM) from its mounting bracket to access the CTM wire harness connectors. Refer to Central Timer Module in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(4) Unplug the wire harness connectors from the CTM. Check the wire harness connectors and the receptacles in the CTM for loose, corroded, or damaged terminals and pins. If OK, go to Step 5. If not OK, repair as required.

(5) Probe the ground circuit cavity of the 14-way CTM wire harness connector and check for continuity to a good ground. Repeat the check between the ground circuit cavity of the 18-way CTM wire harness connector and a good ground. In each case, there should be continuity. If OK, go to Step 6. If not OK, repair the open circuit(s) to ground as required.

(6) Connect the battery negative cable. Check for battery voltage at the fused B(+) circuit cavity of the 14-way CTM wire harness connector. If OK, go to Step 7. If not OK, repair the open circuit to the JB as required.

(7) Probe the door lock switch output (lock) circuit cavity of the 18-way CTM wire harness connector and check for battery voltage as you actuate each power lock switch to the Lock position. If OK, go to Step 8. If not OK, repair the open circuit from either or both power lock switch(es) to the CTM as required.

(8) Probe the door lock switch output (unlock) circuit cavity of the 18-way CTM wire harness connector and check for battery voltage as you actuate each power lock switch to the Unlock position. If OK, go to

Step 9. If not OK, repair the open circuit from either or both power lock switch(es) to the CTM as required.

(9) Disconnect and isolate the battery negative cable. Reinstall the wire harness connectors to the CTM. Connect the battery negative cable. Back-probe the door lock driver circuit cavity of the 18-way CTM wire harness connector and check for battery voltage as either power lock switch is moved to the Lock position. Repeat the test pressing the Lock button of the Remote Keyless Entry (RKE) transmitter. If OK, go to Step 10. If not OK using the power lock switch, but OK with the RKE transmitter, see Power Lock Switch in the Diagnosis and Testing section of this group. If not OK using the RKE transmitter, but OK with the power lock switch, see Remote Keyless Entry Transmitter in the Diagnosis and Testing section of this group. If not OK, with the power lock switch or the RKE transmitter, replace the faulty CTM.

(10) Back-probe the door unlock driver circuit cavity of the 18-way CTM wire harness connector and check for battery voltage as the power lock switch is moved to the Unlock position. Repeat the test pressing the Unlock button of the RKE transmitter twice within five seconds. If OK, see Power Lock Motor in the Diagnosis and Testing section of this group. If not OK using the power lock switch, but OK with the RKE transmitter, see Power Lock Switch in the Diagnosis and Testing section of this group. If not OK using the RKE transmitter, but OK with the power lock switch, see Remote Keyless Entry Transmitter in the Diagnosis and Testing section of this group. If not OK, with the power lock switch or the RKE transmitter, replace the faulty CTM.

POWER LOCK MOTOR

Before you proceed with this diagnosis, confirm proper power lock switch, Central Timer Module (CTM) and power lock switch output circuit operation. See Power Lock Switch and Central Timer Module in the Diagnosis and Testing section of this group. Remember, the CTM circuitry controls the output to each of the power lock motors. For circuit descriptions and diagrams, refer to 8W-61 - Power Door Locks in Group 8W - Wiring Diagrams.

(1) Check each power lock motor for correct operation while moving the power lock switch to both the Lock and Unlock positions. If both of the power lock motors are inoperative, go to Step 2. If one power lock motor is inoperative, go to Step 3.

(2) If both of the power lock motors are inoperative, the problem may be caused by one shorted motor. Unplugging a shorted power lock motor from the power lock circuit will allow the good power lock motor to operate. Unplug each power lock motor wire

DIAGNOSIS AND TESTING (Continued)

harness connector, one at a time, and recheck both the lock and unlock functions by operating the power lock switch. If both of the power lock motors are still inoperative after the above test, check for a short or open circuit between the power lock motors and the CTM. If unplugging one power lock motor causes the other motor to become functional, go to Step 3 to test the unplugged motor.

(3) Once it is determined which power lock motor is inoperative, that motor can be tested as follows. Unplug the wire harness connector at the inoperative power lock motor. Apply 12 volts to the motor terminals to check its operation in one direction. Reverse the polarity to check the operation in the other direction. If OK, repair the short or open circuits between the power lock motor and the CTM as required. If not OK, replace the faulty power lock motor.

REMOTE KEYLESS ENTRY TRANSMITTER

(1) Replace the Remote Keyless Entry (RKE) transmitter batteries. See Remote Keyless Entry Transmitter Battery Replacement in the Service Procedures section of this group. Test each of the transmitter functions. If OK, discard the faulty batteries. If not OK, go to Step 2.

(2) Program the suspect RKE transmitter and another known good transmitter into the RKE module. Use a DRB scan tool, as described in the proper Diagnostic Procedures manual. See Remote Keyless Entry Transmitter Programming in the Service Procedures section of this group.

(3) Test the RKE system operation with both transmitters. If both transmitters fail to operate the power lock system, use a DRB scan tool and the proper Diagnostic Procedures manual for further diagnosis of the RKE system. If the known good transmitter operates the power locks and the suspect transmitter does not, replace the faulty transmitter.

NOTE: Be certain to perform the Remote Keyless Entry Transmitter Programming procedure again following this test. This procedure will erase the access code of the test transmitter from the RKE receiver.

RELAYS

The headlamp (or security) relay is located in the Power Distribution Center (PDC) in the engine compartment. The horn relay is located in the Junction Block (JB), on the left end of the instrument panel in the passenger compartment. The driver unlock relay is located in the relay and fuse block on the back of the JB underneath the left end of the instrument panel in the passenger compartment. Each of these relays can be tested as described in the following procedure, however the circuits they are used in do vary.

To test the relay circuits, refer to the circuit descriptions and diagrams in 8W-39 - Vehicle Theft Security System and 8W-61 - Power Locks in Group 8W - Wiring Diagrams.

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

Remove the relay (Fig. 5) from the PDC, JB or the relay and fuse block as described in this group to perform the following tests:

(1) A relay in the de-energized position should have continuity between terminals 87A and 30, and no continuity between terminals 87 and 30. If OK, go to Step 2. If not OK, replace the faulty relay.

(2) Resistance between terminals 85 and 86 (electromagnet) should be 75 ± 5 ohms. If OK, go to Step 3. If not OK, replace the faulty relay.

(3) Connect a battery to terminals 85 and 86. There should now be continuity between terminals 30 and 87, and no continuity between terminals 87A and 30. If OK, test the relay circuits. If not OK, replace the faulty relay.

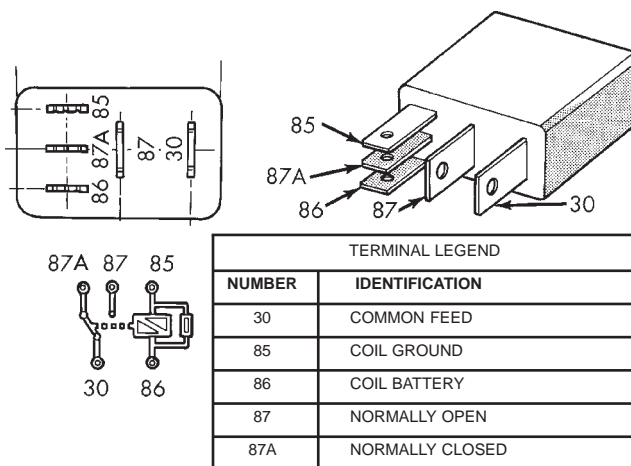


Fig. 5 Relay Terminals

SERVICE PROCEDURES

REMOTE KEYLESS ENTRY TRANSMITTER BATTERY REPLACEMENT

The Remote Keyless Entry (RKE) transmitter case snaps open and shut for battery access. To replace the RKE transmitter batteries:

(1) Using a trim stick or another suitable wide flat-bladed tool, gently pry at the center seam of the

SERVICE PROCEDURES (Continued)

transmitter case halves near the key ring until the two halves unsnap.

(2) Lift the back half of the transmitter case off of the transmitter.

(3) Remove the two batteries from the transmitter.

(4) Replace the two batteries with new Duracell DL2016, or their equivalent. Be certain that the batteries are installed with their polarity correctly oriented.

(5) Align the two transmitter case halves with each other, and squeeze them firmly together until they snap back into place.

REMOTE KEYLESS ENTRY TRANSMITTER PROGRAMMING

To program the Remote Keyless Entry (RKE) transmitter access codes into the RKE receiver in the Central Timer Module (CTM) requires the use of a DRB scan tool. Refer to the proper Diagnostic Procedures manual for more information.

REMOVAL AND INSTALLATION

POWER LOCK SWITCH

CONVENTIONAL CAB AND CLUB CAB

(1) Disconnect and isolate the battery negative cable.

(2) Using a wide flat-bladed tool such as a trim stick, gently pry the upper edge of the switch bezel at the front and the rear to release the clips that secure the switch bezel to the door trim panel opening (Fig. 6).

(3) Pull the switch and bezel unit away from the door trim panel opening far enough to access and unplug the wire harness connector.

(4) Remove the power window and lock switch and bezel unit from the door trim panel.

(5) Reverse the removal procedures to install. When installing the switch and bezel unit to the door trim panel opening, insert the rear of the bezel into the opening, then push down on the front of the bezel until the retaining clips snap into place.

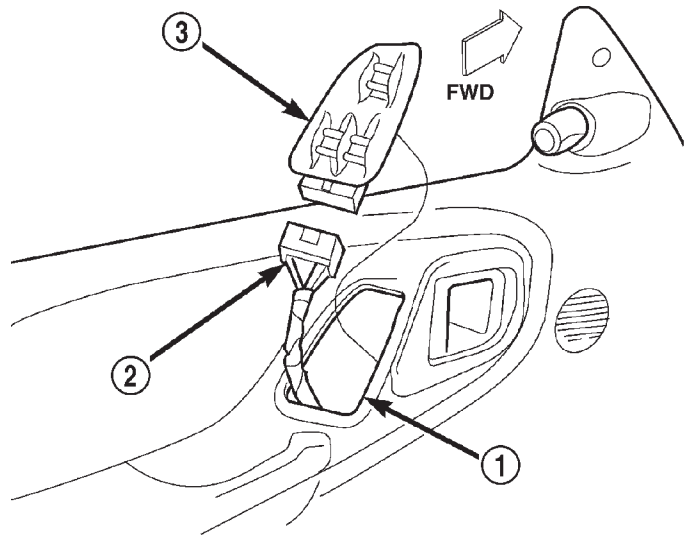
QUAD CAB

DRIVER SIDE FRONT DOOR

(1) Disconnect and isolate the battery negative cable.

(2) Remove the trim panel from the inside of the driver side front door. Refer to Group 23 - Body for the procedures.

(3) From the back side of the trim panel, remove the screws that secure the power window and lock



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Fig. 6 Power Window and Lock Switch and Bezel Unit Remove/Install - Conventional Cab and Club Cab

- 1 - TRIM PANEL SWITCH BEZEL OPENING
- 2 - WIRE HARNESS CONNECTOR
- 3 - SWITCH AND BEZEL UNIT

switch unit to the switch bezel in the door trim panel opening.

(4) Remove the power window and lock switch and the switch bezel from the door trim panel.

(5) Reverse the removal procedures to install. Tighten the mounting screws to 2.2 N·m (20 in. lbs.).

PASSENGER SIDE FRONT DOOR

(1) Disconnect and isolate the battery negative cable.

(2) Remove the trim panel from the inside of the passenger side front door. Refer to Group 23 - Body for the procedures.

(3) With a small thin-bladed screwdriver, gently pry the snap clips at the sides of the power lock switch receptacle on the back of the door trim panel switch bezel and pull the switch out of the receptacle.

(4) Reverse the removal procedures to install. Be certain that both of the switch snap retainers in the receptacle on the back of the door trim panel switch bezel are fully engaged.

POWER LOCK MOTOR

The power lock motor is integral to the door latch unit. If the power lock motor is faulty or damaged, the entire door latch unit must be replaced. Refer to Group 23 - Body for the door latch service procedures.

REMOVAL AND INSTALLATION (Continued)

DRIVER UNLOCK RELAY

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the steering column opening cover and knee blocker from the instrument panel. Refer to Steering Column Opening Cover and Knee Blocker in the Removal and Installation section of Group 8E - Instrument Panel Systems for the procedures.

(3) Reach through the outboard side of the steering column opening in the instrument panel to access the relay and fuse block on the back of the junction block (Fig. 7).

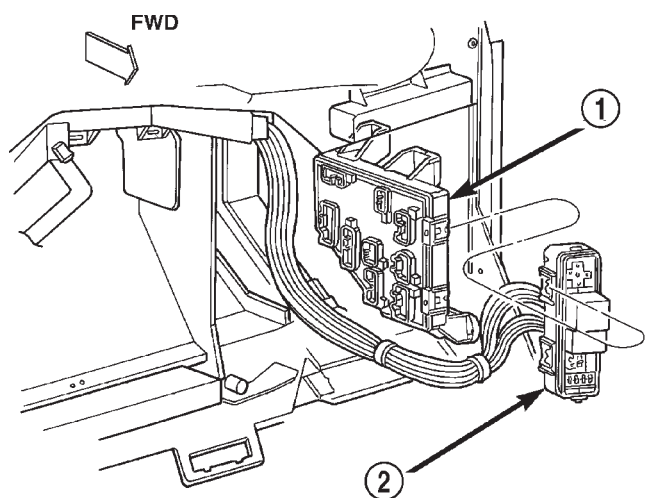


Fig. 7 Relay and Fuse Block

- 1 - JUNCTION BLOCK
- 2 - RELAY AND FUSE BLOCK

(4) Unplug the driver unlock relay from the relay and fuse block.

(5) Install the driver unlock relay by aligning the relay terminals with the cavities in the relay and fuse block and pushing the relay firmly into place.

(6) Connect the battery negative cable.

(7) Test the relay operation.

(8) Reverse the remaining removal procedures to complete the installation.

HEADLAMP RELAY

WARNING: ON VEHICLES EQUIPPED WITH AIR-BAGS, REFER TO GROUP 8M - PASSIVE RESTRAINT SYSTEMS BEFORE ATTEMPTING ANY STEERING WHEEL, STEERING COLUMN, OR INSTRUMENT PANEL COMPONENT DIAGNOSIS OR SERVICE. FAILURE TO TAKE THE PROPER PRECAUTIONS COULD RESULT IN ACCIDENTAL AIR-BAG DEPLOYMENT AND POSSIBLE PERSONAL INJURY.

(1) Disconnect and isolate the battery negative cable.

(2) Remove the cover from the Power Distribution Center (PDC) (Fig. 8).

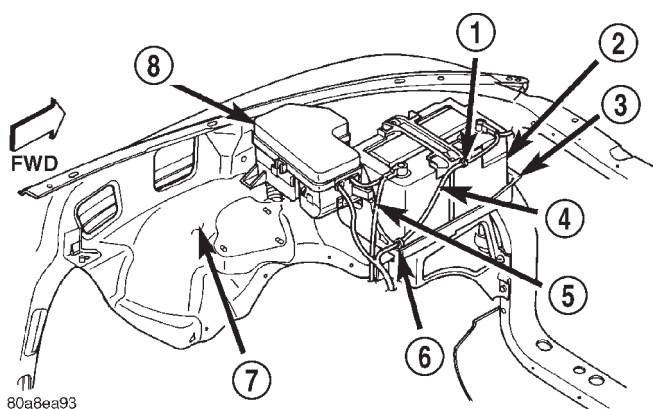


Fig. 8 Power Distribution Center

- 1 - CLIP
- 2 - BATTERY
- 3 - TRAY
- 4 - NEGATIVE CABLE
- 5 - POSITIVE CABLE
- 6 - CLIP
- 7 - FENDER INNER SHIELD
- 8 - POWER DISTRIBUTION CENTER

(3) Refer to the label on the PDC for headlamp relay identification and location.

(4) Unplug the headlamp relay from the PDC.

(5) Install the headlamp relay by aligning the relay terminals with the cavities in the PDC and pushing the relay firmly into place.

(6) Install the PDC cover.

(7) Connect the battery negative cable.

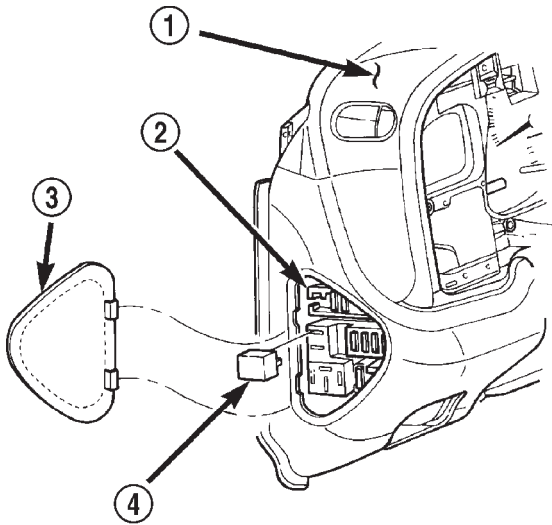
(8) Test the relay operation.

HORN RELAY

(1) Disconnect and isolate the battery negative cable.

(2) Remove the fuse access panel from the left end of the instrument panel (Fig. 9).

REMOVAL AND INSTALLATION (Continued)



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Fig. 9 Horn Relay Remove/Install

- 1 - INSTRUMENT PANEL
- 2 - JUNCTION BLOCK
- 3 - FUSE ACCESS PANEL
- 4 - HORN RELAY

(3) Refer to the label on the inside of the fuse access panel for horn relay identification and location.

(4) Unplug the horn relay from the Junction Block (JB).

(5) Install the horn relay by aligning the relay terminals with the cavities in the JB and pushing the relay firmly into place.

(6) Install the fuse access panel.

(7) Connect the battery negative cable.

(8) Test the relay operation.

